

The **ZeroDT FM-12** is a solution for providing overvoltage transient (surge) protection for the power input and output signals for sensors/devices such as ultrasonic flow meters and transmitters. It consists of a Type 4X cast 413 aluminum enclosure designed for use in hazardous locations with two (3) ZeroDT I/O-24 modules mounted inside.

The **ZeroDT I/O-24** modules utilize state-of-the-art advanced semiconductor (SASD) technology to provide fast, non-degrading protection against surges and lightning induced transients. The three modules provide transient overvoltage protection for a total of 4 pairs, or 8-wires with 1,200 Amps of 8/20  $\mu$ s surge current protection for each line (each line is independently protected — it (each line) has its own surge protector).

The **ZeroDT FM-12** can be utilized as a 'conduit junction box' next to the sensor/device to be protected, and this 'conduit junction box' will provide the needed surge protection to ensure your equipment's survivability.



## ▶ ELECTRICAL SPECIFICATIONS

- **Response Time:** <5 nanoseconds.
- **Configuration:** Series connected, or pass-thru, protects 6 pairs or 12 wires.
- **Nominal Operating Voltage:** 24 VDC.
- **Maximum Continuous Operating Voltage (MCOV) Line-to-Ground:** 36 VDC.
- **Nominal Surge Current,  $I_{Nom}$  (able to withstand repeated applications on each line):**
  - 8/20  $\mu$ s (IEEE/ANSI C62.41 Combination Wave), Line-to-Ground: >1,200 Amps.
  - 10/1000  $\mu$ s (IEEE/ANSI C62.41 Long Wave), Line-to-Ground: >130 Amps.

## ▶ MECHANICAL SPECIFICATIONS

- **Power & Signal Input / Output Connections:** Screw compression lug.
- **Conductor Size:** #26 to #14 AWG.
- **Grounding/Earthing:** Grounding terminal on exterior of enclosure.
- **Enclosure Manufacturer/Catalog Number:** Killark HKBX box and HKX2D dome cover.
- **Enclosure Conduit Openings:** Qty 3, 3/4" NPT.

## ▶ ENVIRONMENTAL SPECIFICATIONS

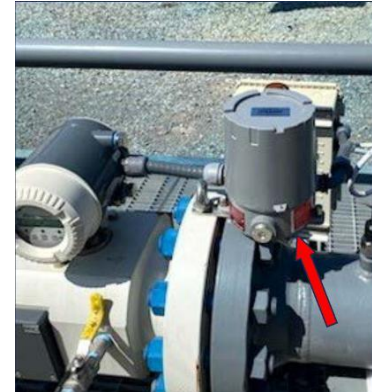
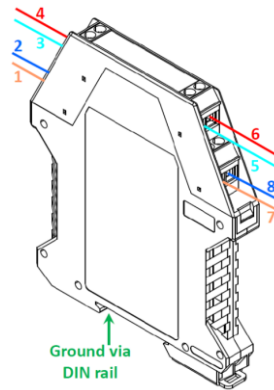
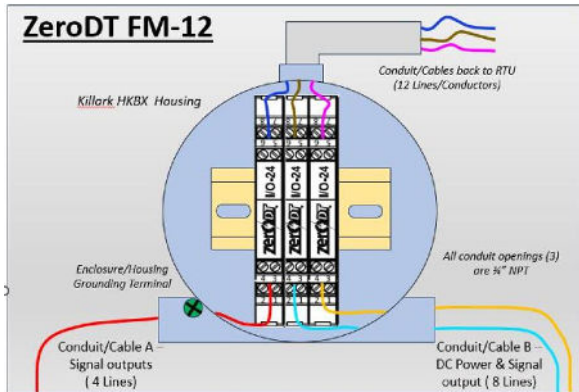
- **Operating / Storage Temperature:** -40°C to +65°C.
- **Humidity:** 0 to 95% non-condensing.

## ▶ CERTIFICATIONS

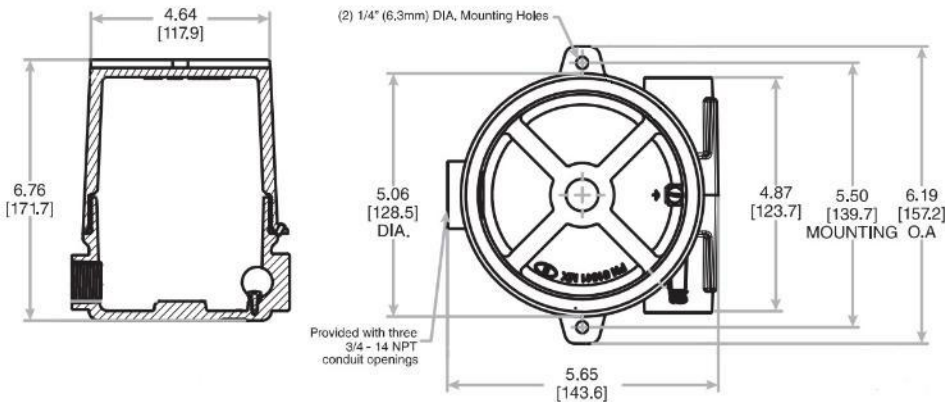
- **ZERODT I/O-24 Module mounted in the enclosure meets the requirements of:**
  - Hazardous Locations - Class I, Division 2, Groups A, B, C, D T6
  - Ordinary Locations – UL 497B
- **Enclosure meets the requirements of:**
  - Hazardous locations -- Class I, Groups A, B, C, D;  
Class I, Zone I, AEx db IIC;  
Class II, Groups E, F, G;  
Class III;  
(See manufacture spec. sheet for additional information)



## ► DIMENSIONAL DRAWINGS / WIRING



Example of ZeroDT FM-12 providing protection for equipment



**WARNING  
EXPLOSION HAZARD:**

Do not disconnect equipment while the circuit is live or unless the area is known to be free of ignitable concentrations.

## ► INSTALLATION PROCEDURE

**ENCLOSURE / HOUSING MUST BE PROPERLY BONDED TO A LOW RESISTANCE EARTH/GROUND FOR PROPER OPERATION AND OVERVOLTAGE PROTECTION !**

1. For maximum overvoltage protection, mount the ZeroDT FM-12 as close as possible to the equipment to be protected.
2. The ZeroDT FM-12 unit is to be installed in accordance with the applicable requirements of the National Electric Code and the local authorities having jurisdiction.
3. Install the Earth/Ground connection using the Green Grounding Screw on the flange of the enclosure/housing. The unit **MUST BE PROPERLY BONDED TO A LOW RESISTANCE EARTH/GROUND FOR PROPER OVERVOLTAGE PROTECTION.**
4. Wiring installation: Terminate either DC power or data/signal loop conductors to the screw terminals provided on the module according to the legend. Note: Screw terminals are compatible with #14 - #26 AWG, stripping length 5/16" (8 mm), and tighten to 4.5-to-5.5 inch pounds (0.5 to 0.6 Nm).

***The ZeroDT I/O-24 allows either side of the module to be the Input or the Output (module orientation does not matter). Also, any path thru the ZeroDT I/O-24 module can be used for DC power, pulse output signals, analog / 4-20 mA signals, or digital communications.***

5. Repeat Step 4 for all the other conductors/lines passing through the FM-12.
6. Fit the enclosure/housing cover and tighten securely.